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10/689,275	10/20/2003	Ian Robinson	NG(ST)-6583	2918

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EXAMINER	
TU, JULIA P	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/689,275	ROBINSON ET AL.	
	Examiner	Art Unit	
	Julia P. Tu	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/12/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,2, 4- 6, 10-12, 19, 21, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Swanke (US 5,564,097).

(1) with regard to claim 1:

Swanke discloses a system for signal conversion, comprising:

a spreader that combines a spreading signal with an input signal to provide a spread input signal (block 208 and 206 in figure 2);

a signal converter that converts the spread input signal from a first domain to a second domain to provide a converted spread input signal (block 214 in figure 2); and

a despreader that despreads the converted spread input signal to provide the input signal in the second domain (block 218 in figure 2; column 3, lines 1-14 and column 4, lines 60-62).

(2) with regard to claim 2:

Swanke further discloses a spreading code generator that produces spreading code to provide a direct sequence spread spectrum spreading signal (inherent in 208 and 216 in figure 2).

(3) with regard to claim 4:

Swanke further teaches a spreading code generator that generates a pseudo random number code to provide a spreading signal (inherent in 208 and 216 in figure 2).

(4) with regard to claim 5:

Swanke further teaches a feedback loop coupling the despreader to the spreader for time aligning the despreading with the spreading (see figure 2)

(5) with regard to claim 6:

Swanke further teaches the first domain is one of a digital domain and an analog domain and the second domain is the other of the digital domain and the analog domain (see 214 in figure 2).

(6) with regard to claim 10:

Swanke further teaches at least one of the spreader and the despreader circuit comprises a mixer (206 and 222 in figure 2).

(7) with regard to claim 11:

Swanke further teaches a receiver comprising the system of claim 1 (see figure 2).

(8) with regard to claim 12:

Swanke further teaches a transmitter comprising the system of claim 1 (inherent in a communication system).

(9) with regard to claim 19:

As shown in figure 2, Swanke teaches a method for signal conversion, comprising:

spreading a signal with a direct sequence spread spectrum (DS-SS) signal in a first domain (see blocks 208 and 206 in figure 2);

converting the spread signal from the first domain to a second domain (see block 214 in figure 2); and

despreading the signal with a DS-SS signal in the second domain (see blocks 218 and 222 in figure 2).

(10) with regard to claim 21:

Swanke further teaches the first domain is one of a digital domain and an analog domain and the second domain is the other of the digital domain and the analog domain (see block 214 in figure 2).

(11) with regard to claim 26:

As shown in figure 2, Swanke teaches a communication device comprising:

means for generating a direct sequence spread spectrum (DS-SS) signal (see block 208 in figure 2);

means for combining the DS-SS signal with an input signal to produce a spread input signal (see blocks 208 and 206 in figure 2);

means for converting the spread input signal from a first domain to a second domain (see block 214 in figure 2); and

means for despreading the spread input signal in the second domain (see blocks 218 and 222 in figure 2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swanke (US 5,564,097) in view of Haas (US 2002/0054619).

(1) with regard to claim 3:

Swanke discloses all of the subject matters in claim 1 above except for a spreading code generator that produces a frequency hopped spread spectrum (FH-SS) signal that is combined with the DS-SS spreading signal.

However, Haas discloses a spreading code generator that produces both a frequency hopped spread spectrum signal and the DSSS spreading signal (page 1, paragraph [0002], page 2, paragraph [0015], paragraph [0020]).

It is desirable to include a spreading code generator that produces both FHSS signal and the DSSS signal to minimize needless transmissions, complex circuitry, and repetitive processes in order to promote the most efficient use of the available power (page 1, paragraph [0004]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a spreading code generator that produces both FHSS signal and DSSS spreading signal as taught by Haas into the system as taught by Swanke to conserve power as well as to minimize costs (page 1, paragraph [0004]).

(2) with regard to claim 20:

Swanke discloses all of the subject matters in claim 19 above except for spreading and despreading the signal with a frequency hopped spread spectrum (FH-SS) signal.

However, Haas discloses spreading and despreading the signal with a frequency hopped spread spectrum (FH-SS) signal (page 3, paragraph [0026]).

It is desirable to spread and despread the signal with a FHSS signal because the functional benefits associated with FHSS systems inevitably prove problematic in wireless networks requiring low cost and low power. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include

spreading and despreading the signal with a FHSS signal as taught by Haas to the system as taught by Swanke to conserve power as well as to minimize costs (page 1, paragraph [0004]).

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Swanke (US 5,564,097) in view of Maruyama (US 5,802,101).

Swanke discloses all of the subject matters in claim 19 above except for converting the signal to a radio transmission frequency; filtering the signal; amplifying the signal; and transmitting the signal over an antenna.

However, Maruyama teaches a radio Tx section 23 comprise converting the signal to a radio transmission frequency; filtering the signal; amplifying the signal; and transmitting the signal over an antenna (column 3, lines 41-49).

One skill in the art would have recognized a radio Tx section comprise converting the signal to a radio transmission frequency; filtering the signal; amplifying the signal; and transmitting the signal over an antenna is a common method in the transmission system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a radio Tx section comprise converting the signal to a radio transmission frequency; filtering the signal; amplifying the signal; and transmitting the signal over an antenna as taught by Maruyama into the method as taught by Swanke to improve the communication system.

6. Claims 7, 8, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swanke (US 5,564,097) in view of King et al. (US 6,683,905).

(1) with regard to claim 7:

Swanke discloses all of the subject matters in claim 1 above except for a mixer for frequency converting the spread input signal prior to despreading.

However, King et al. teach a mixer for frequency converting before AD converter (7 in figure 2).

It is desirable to include a mixer for frequency converting before AD converter to ensure a stable operation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a mixer for frequency converting before AD converter as taught by King et al. to the system as taught by Swanke to enhance to communication system.

(2) with regard to claim 8:

Swanke discloses all of the subject matters in claim 1 above except for the signal converter is one of a delta-sigma analog-to-digital converter (ADC) and a delta-sigma digital-to-analog converter (DAC).

However, King et al. disclose the signal converter is a delta-sigma analog-to digital converter (ADC) (24 in figure 3A).

It is well known in the art to include the signal converter is a delta-sigma analog-to-digital converter so that any DC offset problems can be eliminated by incorporating a carrier error that is large relative to any deviation associated with a received waveform (column 2, lines 1-3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the signal converter is a delta-sigma analog-to-digital converter to minimized errors contributed by DC components (column 2, lines 3-4) as well as to enhance the communication system.

(3) with regard to claim 22:

Swanke discloses all of the subject matters in claim 19 above except for frequency converting the signal to an intermediate frequency.

However, King et al teach frequency converting the signal to an intermediate frequency (see figure 3).

One skill in the art would have recognized that frequency converting the signal to an intermediate frequency is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include frequency converting the signal to an intermediate frequency as taught by King et al. to the method as taught by Swanke to enhance the communication system.

(4) with regard to claim 23:

Swanke discloses all of the subject matters in claim 19 above and further teaches the method comprising: receiving the signal from an antenna (see antenna 202 in figure 2) but does not explicitly teach filtering the signal; amplifying the signal; and converting the signal to an intermediate frequency signal prior to spreading the signal.

However, King et al. teach receiving the signal from an antenna (1 in figure 2); filtering the signal (filter 5 in figure 2); amplifying the signal (6 in figure 2); and converting the signal to an intermediate frequency signal prior to spreading the signal (IF signal in figure 2, column 3, lines 58).

One skill in the art would have recognized that receiving the signal from an antenna; filtering the signal; amplifying the signal; and converting the signal to an intermediate frequency signal prior to spreading the signal is a common method in the

receive system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the method of receiving the signal from an antenna; filtering the signal; amplifying the signal; and converting the signal to an intermediate frequency signal prior to spreading the signal as taught by King et al. to the method as taught by Swanke to improve the communication system.

7. Claims 9, 13, 14, 15, 17, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swanke (US 5,564,097) in view of Panasik et al. (US 2002/0160732).

(1) with regard to claim 9, 25, and 27:

Swanke discloses all of the subject matters in claim 1 above except for a clipping component that reduces peaks associated with the spread input signal, the despreader mitigates degradation and out-of-band (OOB) emissions associated with the peak reduction.

However, Panasik et al. disclose for a clipping component that reduces peaks of the signal before analog-to-digital converter (figure 2, note: 20 is clipping circuit and 34 is analog-to-digital converter; page 1, paragraph [009]).

It is desirable to include the clipping component that reduces peaks of the signal before analog-to-digital converter to keep the dynamic range limited so that it matches the AD converter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the clipping component that reduces peaks of the signal before analog-to-digital converter as taught by Panasik et al. to the

system as taught by Swanke to keep the dynamic range limited so that it matches the AD converter.

(2) with regard to claim 13:

As shown in figure 2, Swanke discloses a signal conversion system comprising: a spreading code generator that produces a direct sequence spread spectrum (DS-SS) signal (see block 208 in figure 2);

a spreading circuit that receives an input signal and combines the input signal with the DS-SS signal to provide a spread input signal (see blocks 208 and 206 in figure 2);

a dispreading circuit that despreads the spread input signal (see blocks 218, 222 in figure 2).

Swanke discloses all of the subject matter above except for a clipping component that reduces peaks associated with the spread input signal.

However, Panasik et al. disclose for a clipping component that reduces peaks of the signal before analog-to-digital converter (figure 2, note: 20 is clipping circuit and 34 is analog-to-digital converter; page 1, paragraph [009]).

It is desirable to include the clipping component that reduces peaks of the signal before analog-to-digital converter to keep the dynamic range limited so that it matches the AD converter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the clipping component that reduces peaks of the signal before analog-to-digital converter as taught by Panasik et al. to the

system as taught by Swanke to keep the dynamic range limited so that it matches the AD converter to provide better performance of the converter.

(3) with regard to claim 14:

Swanke further teaches one of the spreading circuit and despreading circuit comprises a mixer (see blocks 206 and 222 in figure 2).

(4) with regard to claim 15:

Swanke further teaches a signal converter that converts the spread input signal from a first domain to second domain, the signal converter being an analog-to-digital converter (see 214 in figure 2).

(5) with regard to claim 17:

Swanke further teaches second signal converter for converting the spread signal from the second domain to the first domain (see the loop 214, 222, 225 feedback to 216 couple to 214; it is inherent that there is a DAC converter there to convert the signal from digital to analog before inputting into A/D converter).

8. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swanke (US 5,564,097) in view of Panasik et al. (US 2002/0160732) as applied to claims 13 and 15 above, and further in view of King et al. (US 6,683,905).

(1) with regard to claim 16:

Swanke and Panasil et al. disclose all of the subject matters in claims 13 and 15 above except for the signal converter is one of a delta-sigma analog-to-digital converter (ADC) and a delta-sigma digital-to-analog converter (DAC).

However, King et al. disclose the signal converter is a delta-sigma analog-to digital converter (ADC) (24 in figure 3A).

It is well known in the art to include the signal converter is a delta-sigma analog-to-digital converter so that any DC offset problems can be eliminated by incorporating a carrier error that is large relative to any deviation associated with a received waveform (column 2, lines 1-3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the signal converter is a delta-sigma analog-to-digital converter to minimized errors contributed by DC components (column 2, lines 3-4) as well as to enhance the communication system.

(2) with regard to claim 18:

Swanke and Panasil et al. disclose all of the subject matters in claim 13 above except for a mixer for frequency converting the spread input signal before signal convertion.

However, King et al. teach a mixer for frequency converting before AD converter (7 in figure 2).

It is desirable to include a mixer for frequency converting before AD converter to ensure a stable operation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a mixer for frequency converting before AD converter as taught by King et al. to the system as taught by Swanke to enhance to communication system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julia P. Tu whose telephone number is 571-270-1087. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.T.
05/18/2007

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER